admitted, but at present we have no materials to justify the conclusion that they represent a degradation of culture, even though the steps by which this artistic capacity was acquired may remain one of the unsolved problems of ethnology. The evidence of this "cultural break" between the art of the Palæolithic people and its comparative absence in the Neolithic people has been recently discussed by Mr. W. Johnson in his "Folk-memory, or the Continuity of British Archæology," which offers as reasonable a solution of this tangled problem as is possible at present

MR. I. M. CASANOWICZ, in the thirty-sixth volume of the Proceedings of the United States National Museum, gives an account of the collection of rosaries under his charge. It is rather disappointing in numbers and interest when compared with more than one collection in this country, containing only 105 examples, of which twenty-seven belong to the Roman Catholic Church. Strange to say, there is no example of a Brahmanical rosary, while those from Japan, Tibet, and China are of some importance. The rosary in its present form is believed to have started among the Hindus, from whom it was adopted by the Mahâyâna, or northern and most advanced school of Buddhism. Apparently from them it was adopted by the Mohammedans, and some believe that it came to Europe with the returning Crusaders. Some rude mode of counting the repetitions of prayers is recorded by the historian Sozomen to have been in use in Egypt in the fifth century A.D., but the Roman Church attributes its introduction to St. Dominic (1170–1221). Mr. Casanovicz believes that, though the Buddhist and Mohammedan bead chaplets preceded the Christian in order of time, there is not necessarily a causal connection between them. In any case, both in Islam and the early Christian Church the primitive mode of counting the prayers was by means of pebbles or date-stones, and the idea of replacing these by beads threaded on a string may be due to imitation of the practices of eastern religions.

THE U.S. Weather Bureau has favoured us with specimen copies of its meteorological charts of the North Atlantic and North Pacific oceans for July, and seasonal chart for the South Atlantic for June to August, corresponding very closely to the pilot charts issued by the London and Hamburg offices, to which we have frequently referred. The Weather Bureau took over the control of meteorological work on the oceans from the Navy Department a few years ago, and now receives reports from more than 2000 observers on vessels of every nationality. From these reports it prepares daily synoptic charts for the purpose of tracing storm tracks, percentage of fogs, prevailing direction of wind, trade-wind limits, pressure and temperature. It is proposed to include a seasonal chart of the South Pacific Ocean in September next; no charge is made for any of these useful publications, which are of great benefit to the seafaring community.

IN the course of an extended investigation on the residual charges of condensers with dielectrics of various materials, Mr. C. L. B. Shuddemagen, of the Jeffersen Physical Laboratory of Harvard University, has discovered a method of making condensers with pure paraffin wax instead of waxed paper. Such condensers, he finds, show no residual charge, and on this account are likely to be of great importance in future electrical work. In order to prepare the thin sheets of paraffin required, Mr. Shuddemagen dips a thin, smooth board which has been soaked in water for a few days, and is rinsed with water immediately before use, into a bath of liquid paraffin wax. On withdrawing the board it is found to have on either side a thin sheet of paraffin, which is readily detached, and allowed to hang in the air to get rid of all moisture. The thickness of the sheet is determined by the temperature of the bath and of the board, and by the time the board is immersed but 0·5 millimetre has been found most suitable. Any irregularities in the surface of the sheet are smoothed with the blade of a safety razor before the tin foil is placed on the sheets. Mr. Shuddemagen's paper forms Memoir No. 18 of vol. xliv. of the Proceedings of the American Academy of Arts and Sciences.

OUR ASTRONOMICAL COLUMN.

DISCOVERY OF A COMET, 1909*a*.—A telegram from the Kiel Centralstelle announces the discovery of an eleventh-magnitude comet, by Mr. Daniel, at Princeton (N.J.) on June 15.

At 14h. 0m. (Princeton M.T.) on that date the position was R.A. = 1h. 39·9m., dec. = 28° 55′ N., and the motion of the comet was recorded as northerly and rapid.

A second telegram states that this object was observed by M. Javelle at Nice on June 16, when at 13h. 13·3m. (Nice M.T.) the position was R.A. = 1h. 41m. 54s., dec. = 29° 58′ 18″ N.

Thus it appears that the comet is now in the constellation Triangulum, apparently travelling, in a direction a little east of north, towards Andromeda and Perseus; this position rises about four hours before the sun. It is interesting to remark that comet 1907*d*, subsequently a naked-eye object, was discovered by Mr. Daniel on June 14 (1907), and was then of the eleventh magnitude.

A set of elements and an ephemeris, computed by Prof. Kobold, are given in Circular No. 109 of the Centralstelle.

Ephemeris (12*h*. *M.T. Berlin*).

1909		α h. m.		δ °		Brightness
June 22	...	1 59·5	...	+38 3·9	...	0·8
26	...	2 12·7	..	+42 53 0	...	0·7
30	...	2 27·1	...	+47 4·7	...	0·6
July 4	...	2 42·7	...	+51 0·9	...	0·5
8	...	2 59·4	...	+54 22·9	..	0·4

Perihelion is given as June 3.

A supplement to *Astronomische Nachrichten*, No. 4331, informs us that this comet was discovered independently by M. Borrelly, at Marseilles, on June 14, 14h. 30m. (*Marseilles* M.T.). It should therefore be known as comet 1909*a* (Borrelly-Daniel).

ELEMENTS AND EPHEMERIS FOR WINNECKE'S COMET, 1909.—As Winnecke's comet is due at perihelion in October, Prof. Hillebrand has computed a set of elements and an ephemeris for this return, and publishes them in No. 4330 of the *Astronomische Nachrichten*.

The time of perihelion is given as 1909 October 4·0 (M.T. Berlin), and the ephemeris covers the period June 31 to October 12. During July the comet should apparently travel in a south-east direction through Leo nearly parallel to a line joining δ and β Leonis; on July 18 it should be about 1° south of the former, and on August 2 about 15′ north of the latter, star. The position given for June 31 is α (app.) = 10h. 32m. 46s., δ (app.) = 24° 51·7′ N.

THE RECENT LUNAR ECLIPSE, JUNE 3.—Owing to the persistent clouds, the total eclipse of the moon which took place on June 3–4 was unobservable in London, but that it was well observed in other localities is shown by the reports now published.

MM. Borrelly and Coggia made observations at Marseilles, the results of which are published in No. 23 (June 7) of the *Comptes rendus*.

The former noted the exceptional intensity of the penumbra at the beginning of the eclipse, and a seamy appearance of the umbra which gave the front line of the shadow a sinuous appearance. In the telescope the eclipsed moon appeared rose-coloured, but to the naked eye it was red; many of the lunar circles were visible despite the shadow.

M. Coggia observed that on the approach of the shadow's edge, at 12h. 45m. (Marseilles M.T.), Plato took on a red tint, which became redder until, at 12h. 50m., it appeared like glowing charcoal.

Mr. J. H. Elgie writes that, according to his observations, at Leeds, the eclipse was a "light" one; although at its first encroachment the shadow was dead black, when the disc was fully eclipsed many features could be perceived by the naked eye. The shadow was first seen, without a telescope, at about 11.45 p.m. Mr. Elgie also directs attention to a curious glow in the northern heavens throughout the night, almost suggestive of an auroral display.

THE PHOTOHELIOMETER.—In No. 4, vol. xxix., of the *Astrophysical Journal* (May, p. 313), Prof. Poor describes, and gives the results of, some experiments carried out at the Yerkes Observatory in order to determine the feasibility of employing the heliometer method in the endeavour to detect differences in the solar diameters, polar and equatorial, at different epochs.

Photographs were obtained with two lenses of 2 inches aperture and 25 feet focal length, mounted side by side in the same cell, so as to give overlapping images of the sun. Then two methods of measurement were tried, one in which the diameter passing through the centres of the two images was determined directly, the other in which the solar radius was determined from measurements of the chord common to the two overlapping images. Prof. Poor discusses both methods, and concludes that the second will give the better results. Finally, he concludes that for his researches the photoheliometer is better than the direct photographic method, and gives some practical working hints, *e.g.* wet plates should be used on account of the sharper, clearer images they give. A series of six trial plates, taken during October and November, 1907, gave a mean excess of equatorial over polar radius of 0·95″.

THE ERRORS OF POSITION OF IMAGES PHOTOGRAPHED THROUGH GLASS.—For some time past photographs of star areas have been taken at Harvard College Observatory with the film side of the plate turned away from the object, so that when compared, film to film, with normal negatives of a different epoch, changes occurring during the interval might be readily detected.

So far these have only been used for light changes, and not for changes of position produced by proper motion and parallax. Tests recently carried out by Dr. Schlesinger at the Allegheny Observatory show, however, that such plates may safely be used for determinations of changes of position, for observing through the glass has, in the plates tested, produced no serious error, the mean value of the possible error being of the order of 0·001 mm. On such plates, taken at an interval of ten years, a proper motion of 0·025″ per annum could be readily detected (Publications of the Allegheny Observatory, vol. i., No. 14).

THE NEW INSTITUTE OF PHYSIOLOGY AT UNIVERSITY COLLEGE, LONDON.

BY the completion of the Physiological Institute at University College, London, which has been erected within the past twelve months upon the site of the playground of University College School, the University of London possesses what is probably the finest laboratory of its kind in the country, and one which is perfectly equipped both for teaching all branches of physiology and for the pursuit of original research work. The erection of this institute marks an epoch, not only in the history of the re-constituted University of London, but in the development and advancement of the British school of physiology, a school which was practically non-existent a few decades ago, when nearly all research in this subject was carried out in the laboratories of France and Germany.

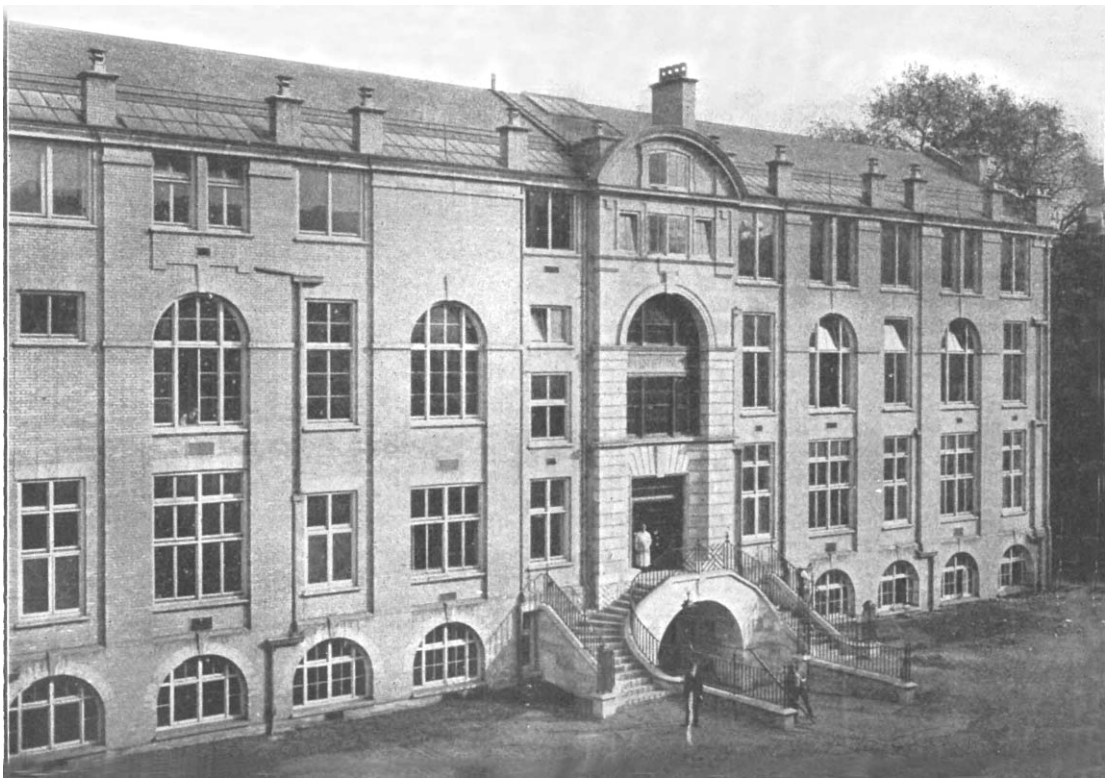

FIG. 1.—Institute of Physiology, north elevation.

It is a matter for congratulation to those who have been instrumental in founding this institute that the subject of physiology is to be both taught and advanced by original work, for in the creation of this science University College may fairly claim to have played a